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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/678,361 | 10/02/2003 | Tomoya Maekawa | 10873.1305US01 | 4013 |

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| EXAMINER | |
|---|---|
| HAM, SEUNGSOOK | |
| **ART UNIT** | **PAPER NUMBER** |
| 2817 | |

DATE MAILED: 08/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/678,361 | MAEKAWA ET AL. | |
| | Examiner | Art Unit | |
| | Seungsook Ham | 2817 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) *5-15,17 and 21-41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,16,18-20 and 42* is/are rejected.

7)☒ Claim(s) *3 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter of claim 16 ("a matching circuit comprising a coupling line, **having one end that is opened** and the outer end that is connected to an external terminal" in conjunction with the limitation, "the external terminal connected to the coupling line is on a **short-circuited side** of the first filter and second filter") must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 16 and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The newly amended claim 16, "the external terminal connected to the coupling line is on a **short-circuited side** of the first filter and second filter" in conjunction with the limitation, "a matching circuit comprising a coupling line, **having one end that is opened** and the outer end that is connected to an external terminal" are not shown nor disclosed in the original disclosure. Note that the elected species I, figure 13 shows a coupling line 9 being open and other end being connected to an external terminal. However, the external terminal that is connected to the coupling line is **not on the short-circuited side** of the first filter 3a, 3b, and second filter, 4a, 4b, rather the external terminal is connected to the coupling line **on the open-circuited side** of the first filter and second filter. Thus, the newly amended claim contains subject matter which was not described in the original specification.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishijima et al. (US '158) in view of Hirai et al. (US '130) and Tsukamoto et al. (US '625).

Nishijima et al. (figs. 8A-8D) discloses a duplexer comprising a laminate in which dielectric layers 21a, 21b and electrode layers 10, 11a-11e are laminated alternately, comprising: a first filter having at least one first stripline resonator for transmitting 11d, 11e and a second filter having at least one second strip resonator for receiving 11a-11c and provided in laminate and have different pass band frequencies (it is inherent that the Rx and Tx filters will have different pass band frequencies to operate as a duplexer);

a matching circuit comprising a coupling line 26b having one end is short-circuited and the other end is connected to an external terminal 13; the at least first stripline resonator and the at least second stripline resonator are short-circuited at one end (i.e., grounded), and are coupled to the coupling line by electromagnetic field coupling (it is inherent that the coupling line 26b are electromagnetically coupled to adjacent resonators 11c, 11d). Nishijima et al. also discloses at least two electrode layers (the top and bottom ground electrodes 10) and two dielectric layers 21a, 21b laminated alternately.

Nishijima et al. does not show the laminate having at least four dielectric layers and the external terminal connected to the coupling line on a short-circuited side of the first and second filters.

However, providing a multi-layered (e.g., at least four dielectric layers) structure to form a filter or duplexer is well known in the art. Hirai et al. (fig. 12) discloses a well-known stripline filter used for a duplexer having a multi-layered structure and teaches providing additional dielectric layers to reduce the size of the filter (compare fig. 1 and figs. 4 and 12).

Moreover, providing the external terminal connected to a coupling line on a short-circuited side of the first and second filters is also well known in the art. Tsukamoto et al. (fig. 5) discloses a duplexer having a coupling line 26b connected to an external terminal 7b on a short-circuited side of the first and second filters 23, 23b, 23d-23f.

It would have been obvious to one of ordinary skill in the art to provide at least four dielectric layers in the device of Nishijima et al. to reduce the size of the

filter/duplexer as taught by Hirai et al. (col. 2, lines 38-40 and col. 13, lines 38-43), and also provide the external terminal connected to the coupling line on a short-circuited side of the first and second filters in the device Nishijima et al. to provide an improved attenuation characteristics as taught by Tsukamoto et al. (see abstract and col. 10, lines 1-29).

Regarding claim 2, although Nishijima et al. (figs. 8A-8D) does not show taper stripline resonators ("at least one of the first stripline resonator and the second stripline resonator has a large line width on an open end side and a small line width on a short-circuited side"), figure 1B shows a plurality of tapered resonators. Moreover, taper stripline resonators are well known in the art as shown by Hirai et al. (fig. 15) and Tsukamoto et al. (fig. 5). It would have been obvious to one of ordinary skill in the art to provide at least one of the first and second stripline resonators having a taper shape in the device of Nishijima et al. to obtain a desire filter characteristics and taper resonators are well known in the art as shown by Hirai et al. or Tsukamoto et al.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishijima et al. (US '158) in view of Hirai et al. (US '130) and Tsukamoto et al. (US '625) as applied to claims 1 and 2 above, and further in view of Shigemura et al. (JP '005).

The modified device of Nishijima et al. does not show the first and second stripline resonators are arranged symmetrically along a center axis.

However, arranging the first and second stripline resonators symmetrically is considered as an obvious modification to obtain a desire filter characteristics. Moreover, it is well known in the art to provide the two stripline filters symmetrically for

easy manufacturing. Shigemura et al. (fig. 3) discloses a laminated duplexer having first and second stripline filters arranged in symmetrically.

It would have been obvious to one of ordinary skill in the art to arrange the first and second stripline resonators symmetrically along a center axis in the modified device of Nishijima et al. to obtain a desire filter characteristics or for easy manufacturing as taught by Shigemura et al. (see translation, paragraph [0023]).

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishijima et al. (US '158) in view of Hirai et al. (US '130) and Tada et al. (US '521) (insofar as understood).

Nishijima et al. (figs. 8A-8D) discloses a duplexer comprising a laminate in which dielectric layers 21a, 21b and electrode layers 10, 11a-11e are laminated alternately, comprising: a first filter having at least one first stripline resonator for transmitting 11d, 11e and a second filter having at least one second strip resonator for receiving 11a-11c and provided in laminate and have different pass band frequencies (it is inherent that the Rx and Tx filters will have different pass band frequencies to operate as a duplexer); a matching circuit comprising a coupling line 26b having one end is short-circuited and the other end is connected to an external terminal 13; the at least first stripline resonator and the at least second stripline resonator are short-circuited at one end (i.e., grounded), and are coupled to the coupling line by electromagnetic field coupling (it is inherent that the coupling line 26b are electromagnetically coupled to adjacent resonators 11c, 11d). Nishijima et al. also discloses at least two electrode layers (the

top and bottom ground electrodes 10) and two dielectric layers 21a, 21b laminated alternately.

Nishijima et al. does not show the laminate having at least four dielectric layers and the coupling line having one end being open-circuited.

However, providing a multi-layered (e.g., at least four dielectric layers) structure to form a filter or duplexer is well known in the art. Hirai et al. (fig. 12) discloses a well-known stripline filter used for a duplexer having a multi-layered structure and teaches providing additional dielectric layers to reduce the size of the filter (compare fig. 1 and figs. 4 and 12).

Moreover, Tada et al. (fig. 11) discloses a similar stripline duplexer having a coupling line 13 having one end being open-circuited and other end being connected to an external terminal ANT.

It would have been obvious to one of ordinary skill in the art to provide at least four dielectric layers in the device of Nishijima et al. to reduce the size of the filter/duplexer as taught by Hirai et al. (col. 2, lines 38-40 and col. 13, lines 38-43), and also provide the coupling line having one end being open-circuited in the modified device of Nishijima et al. to obtain a desired filter characteristic since Tada et al. suggests that the coupling line can be either open-circuited (fig. 11) or short-circuited (figs. 12A-12D).

Regarding the newly added limitation, "the external terminal connected to the coupling line is on a short-circuited side of the first filter and the second filter" is

considered as an obvious design modification since the original disclosure failed to provide support for such limitation.

Regarding claim 18, although the modified device of Nishijima et al. does not show taper stripline resonators ("at least one of the first stripline resonator and the second stripline resonator has a large line width on an open end side and a small line width on a short-circuited side"), Nishijima et al. (see figure 1B) shows a plurality of tapered resonators. Moreover, taper stripline resonators are well known in the art as shown by Hirai et al. (fig. 15). It would have been obvious to one of ordinary skill in the art to provide at least one of the first and second stripline resonators having a taper shape in the modified device of Nishijima et al. since taper resonators are well known in the art as shown by Hirai et al.

***Allowable Subject Matter***

Claims 3 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments with respect to claims 1, 2, 16, 18-20 and 42 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seungsook Ham whose telephone number is (571) 272-2405. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seungsook Ham
Primary Examiner
Art Unit 2817

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